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Some Mechanical and Metallurgical Aspects of the Degradation in Interconnects

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Abstract
The mechanical and metallurgical characteristics of PbSn solder joints used as interconnects in Multi-Chip Modules (flip-chips) are examined through mechanical testing (in tension and in shear) and by thermal treatments. The influence of the solder pad metallurgies (Au and Ni) upon the behaviour of the solder joints is examined. Fatigue testing performed upon flipchip samples demonstrates the difference in mechanical comportment between Pb40Sn60 and Pb95Sn5 solders, as well as the influence of Au upon the fatigue life. A model for predicting fatigue life is put forward.

Keywords: Reliability, fatigue testing, degradation, metallurgical characteristics, of PbSn solder joints, Multi- Chip Modules.

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